

(12) UK Patent Application (19) GB (11) 2 317 784 (13) A

(43) Date of A Publication 01.04.1998

(21) Application No 9720454.9

(22) Date of Filing 25.09.1997

(30) Priority Data

(31) 08256911

(32) 27.09.1996

(33) JP

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(51) INT CL⁶
H04M 1/272 1/274

(52) UK CL (Edition P)
H4K KBNJ KBNX

(56) Documents Cited

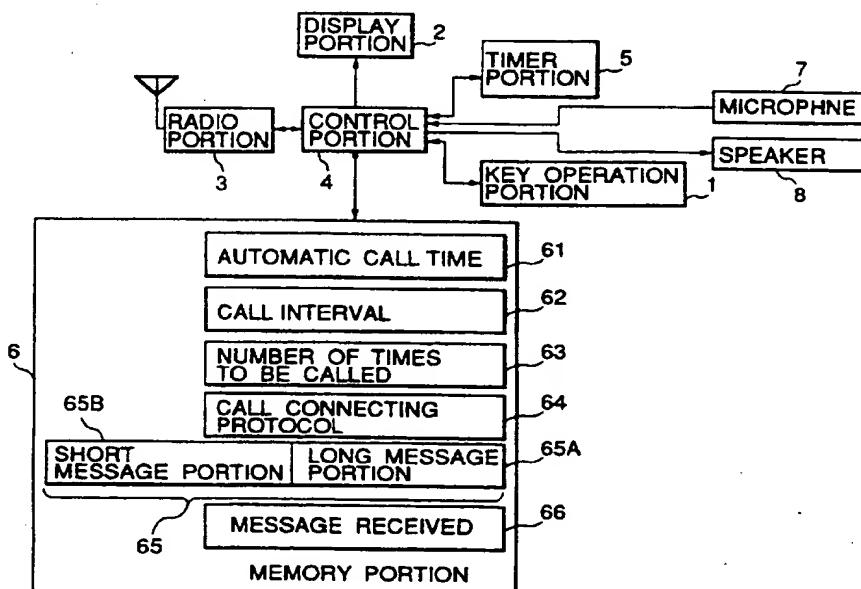
GB 2238208 A EP 0554180 A2 US 5224146 A
US 4907258 A US 4887294 A US 4209668 A
US 4052570 A

(58) Field of Search
UK CL (Edition O) H4K KBHX KBNJ KBNX
INT CL⁶ H04M 1/272 1/274

(54) A telephone for automatically dialling a telephone number at a predetermined time

(57) A telephone apparatus is disclosed in which a telephone number can be automatically dialled at a predetermined time. The apparatus comprises a memory 6 for storing a call time, a call interval and a call limit and a controller 4 for controlling the telephone set. The apparatus is arranged to dial a telephone number at the specified call time and to repeatedly dial the number until the call is completed or a number of attempts have been made, which is equal to the call limit, should the call go unanswered. A message 65A, 65B is stored and can be played back when the call is answered. The telephone number can be stored during dialling for later re-dialling.

Fig.1



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Fig.1

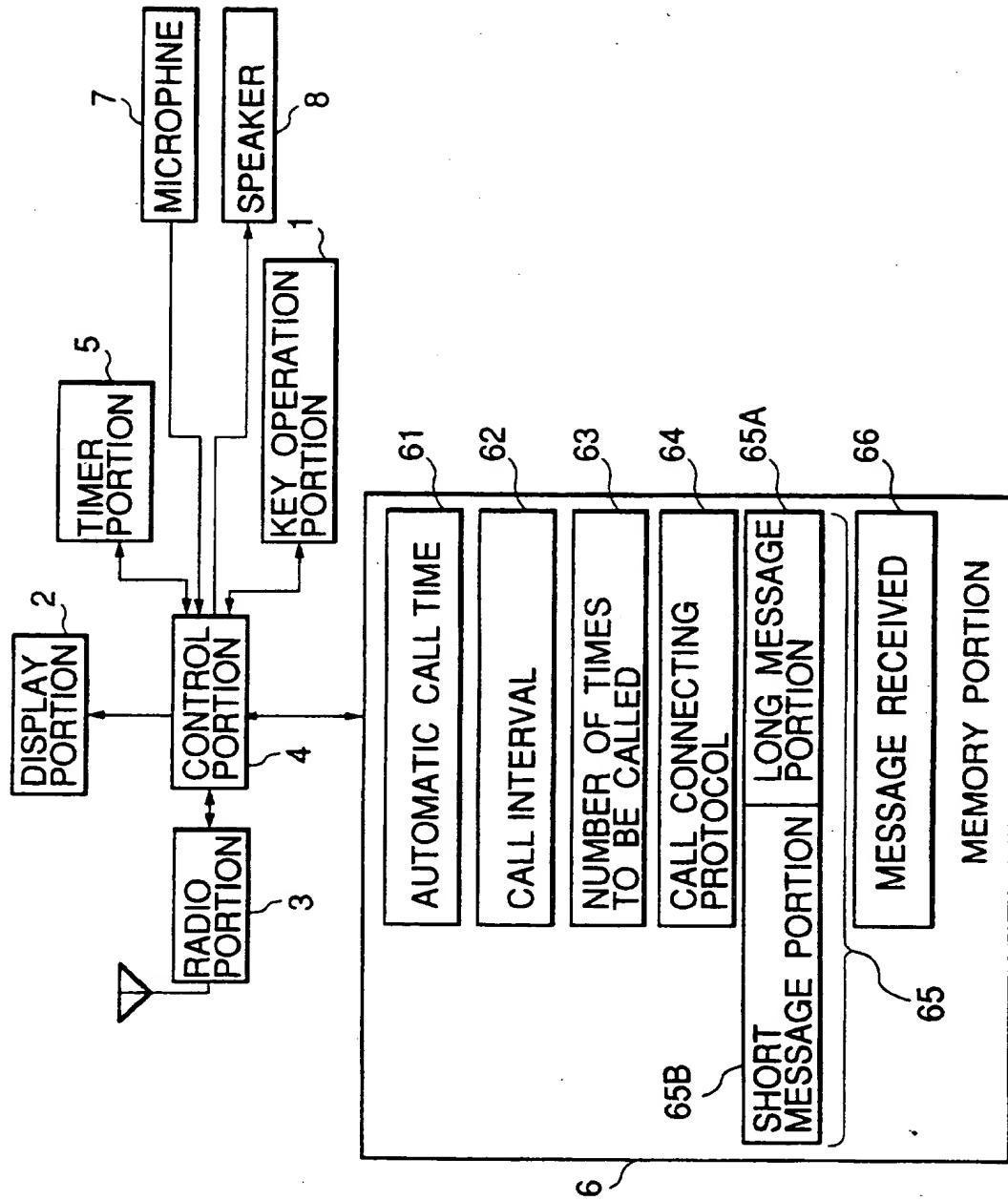


Fig.2

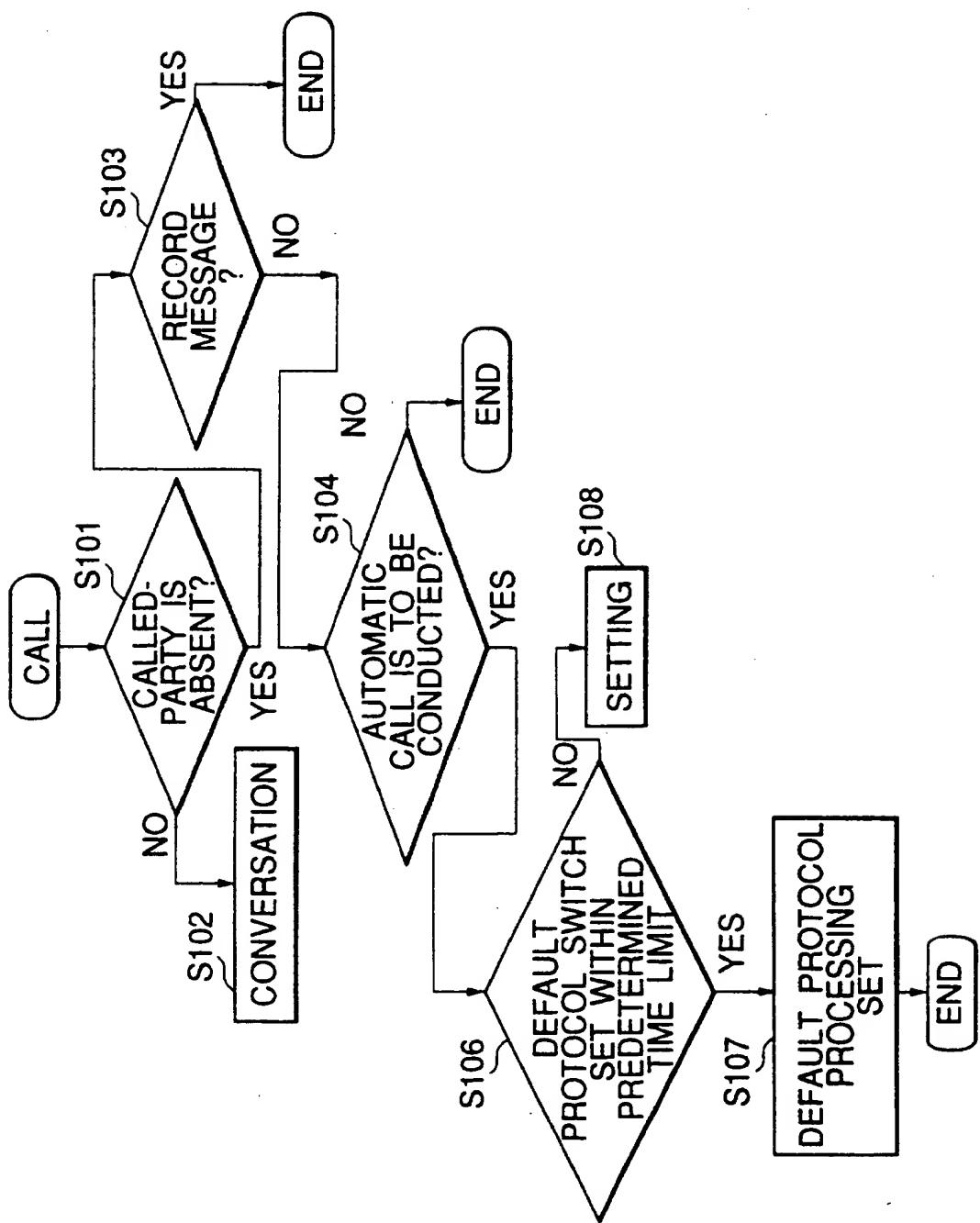
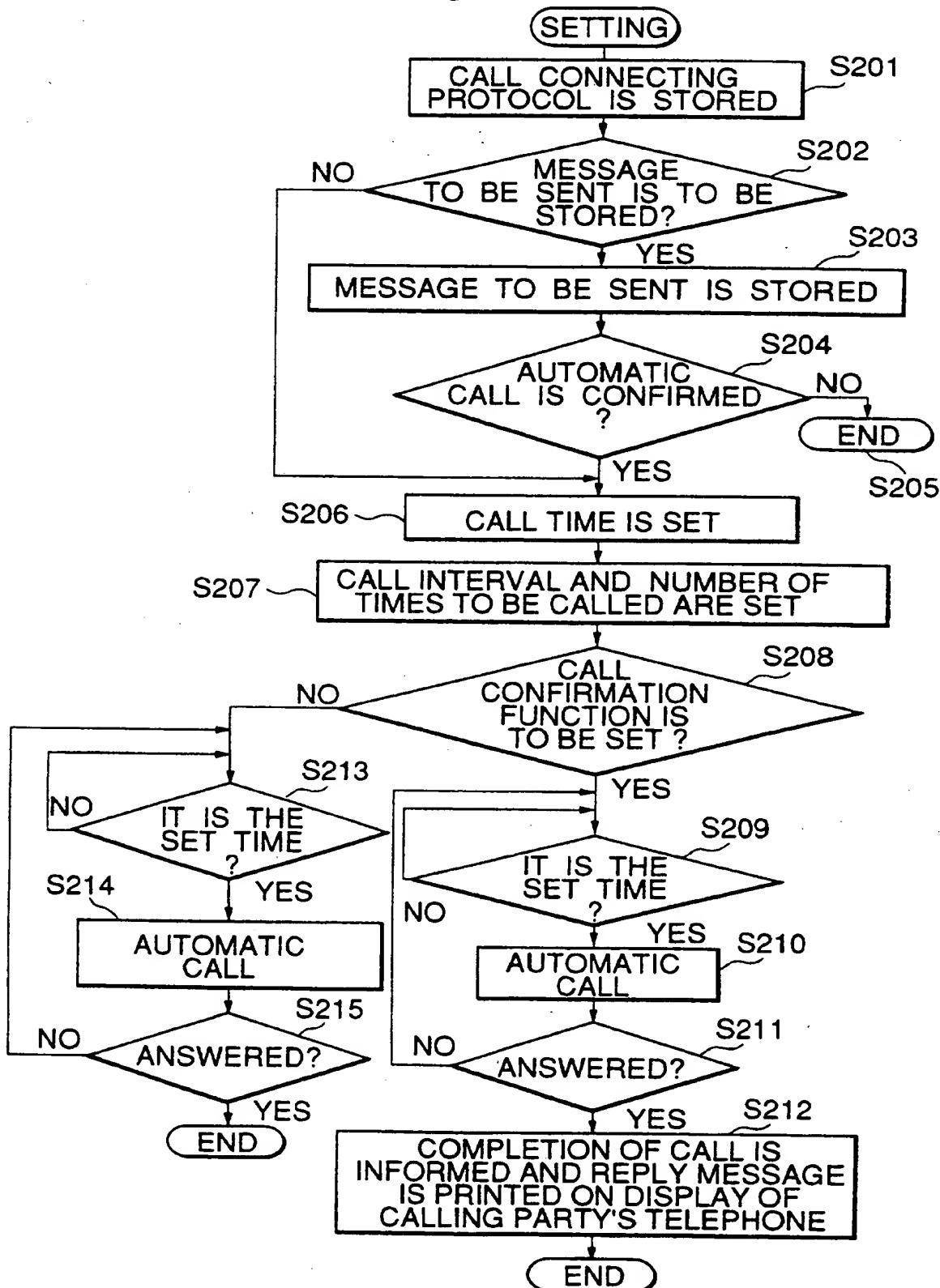


Fig.3



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Fig.4

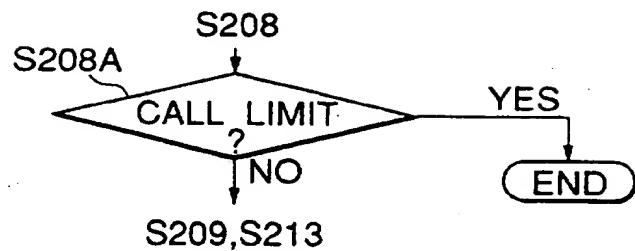
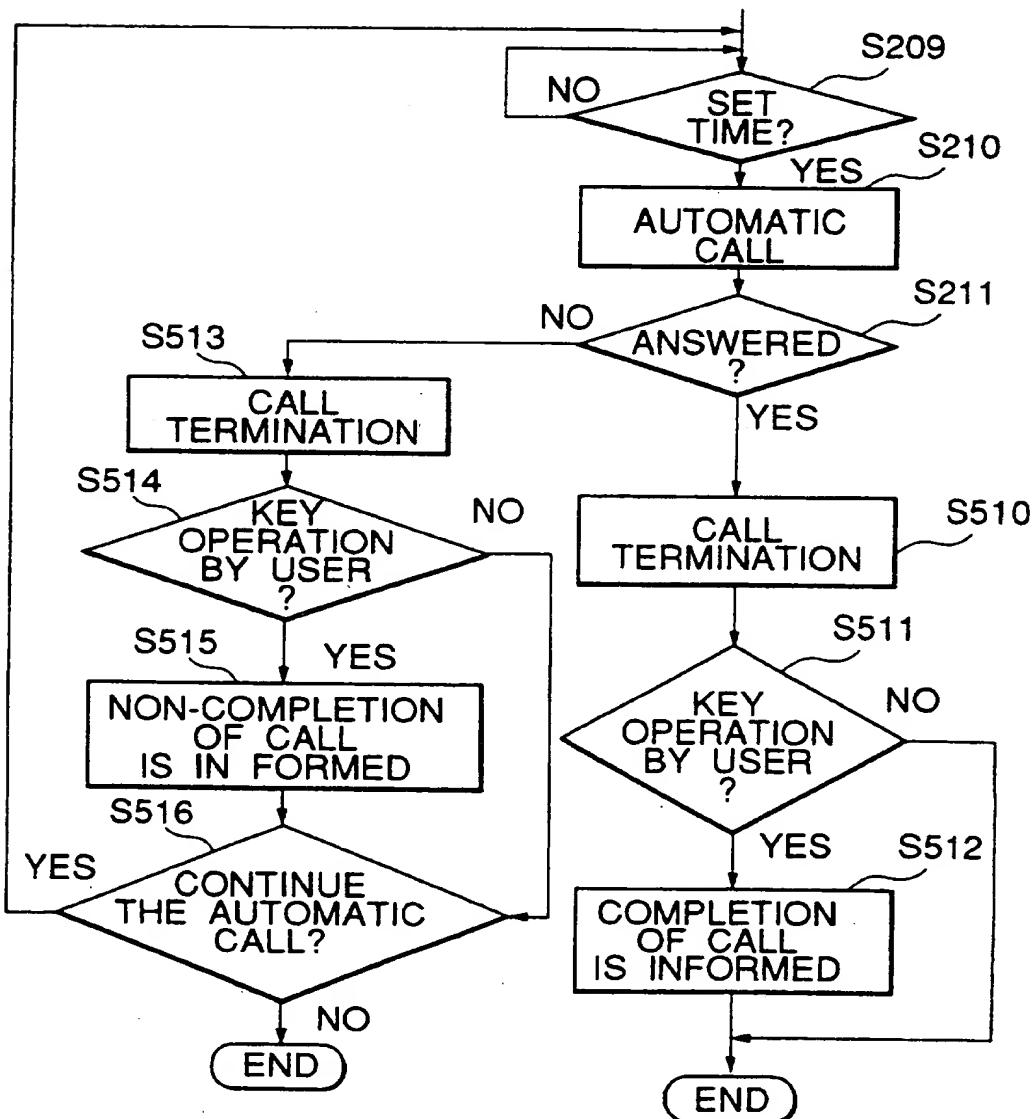


Fig.5



METHOD AND TELEPHONE SYSTEM FOR AUTOMATIC
CALLING

The present invention relates to a telephone system and method, and more particularly to a method and telephone system having an automatic call function.

A telephone set which automatically dials a designated party at a predetermined future time is disclosed in, for example, Japanese Patent Laid-Open No. Sho 63-20941, commonly assigned with the present application.

In the telephone set, a telephone number of the designated party and the predetermined future time are inputted from a ten-key number pad (e.g., keyboard) by a user, and are stored into a memory. When it is the stored time, "CALL" is displayed. Then, the user "hooks off" a handset (e.g., takes a handset off the hook). In response, the telephone set automatically dials the stored telephone number. If no reply is received from the designated party, "ABSENCE" and "TIME OVER" are displayed. Since the call is automatically made for the user, the likelihood/possibility of forgetting to make the call is reduced, and the chance of contacting the called party is increased.

Further, Japanese Utility Model Laid-open No. Hei 1-142254 discloses a telephone set which automatically sends a stored message. In this telephone set, a message to be sent, along with a telephone number and a future time, are stored into a memory by the user in advance. When it is the stored time, the stored telephone number is automatically dialed. If the called party answers, the telephone set sends the stored message (e.g., the message includes voice information) and records a message

from the called party. Therefore, a message can be sent by the automatic dialling system at a time convenient for the called party or the calling party, thereby preventing users from forgetting to call one another.

The present inventor of the present invention recognized that such automatic calling systems have the capability of calling only once and that the calling party has to schedule another automatic call if the called party is unavailable when the telephone makes the automatic call.

Further, the present inventor recognized that if the user (e.g., calling party) is remote from the telephone set, the user cannot judge whether or not the stored message has reached the called party without receiving a message (e.g., response) from the called party. As a result, this technique is cumbersome, inefficient, and time-consuming.

In a first aspect, the present invention comprises a telephone having an automatic call function, comprising a memory for storing a telephone number and at least one of a call time, a call interval, and a call limit, and a controller for automatically calling said telephone number either at said call time or during said call interval and, if said call is not completed, for repeatedly calling said telephone number until either said call limit is reached or said call is completed.

In a preferred embodiment, a telephone set having an automatic call function includes a memory for storing a telephone number, a call time, a call interval and a call limit, and a controller for automatically making a call to the telephone number at the call time and during the call intervals until the call limit is reached or the call is completed.

Further, an operation unit sets the call time, the call interval and the call limit, and a timer measures the call time and the call interval.

According to the above, a message to be sent is stored in the memory, and when the call is completed, the message is transmitted.

In a second aspect, the present invention provides a telephone comprising a controller for making a call to a telephone number, and a memory for storing, during said call, said telephone number, wherein an automatic call time is stored in said memory, and after said call ends, said controller makes an automatic call to said

telephone number at said automatic call time.

In another preferred embodiment, the telephone includes an operation unit for inputting a telephone number, a controller for making a call to the telephone number and a memory for storing, during the call, the telephone number. An automatic call time is input to the operation unit and stored in the memory. After the call ends, the controller makes an automatic call to the telephone number at the automatic call time.

According to the above, a call interval and a call limit are input to the operation unit and are stored in the memory. The controller repeats the automatic call a number of times equal to the call limit, at the call intervals, until the automatic call is completed. Thus, if the called party is absent (unavailable to complete the call), a repeated call may be necessary in the future. However, the calling party need not set the call time again, nor does the calling party itself have to call the called party again later.

Additionally, it is unnecessary for the user to input the telephone number in order to store it into the memory. Thus, the system and technique of the present invention is easier to use, as compared to the conventional systems, and more efficient.

Preferred features of the present invention will now be described, purely by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a schematic block diagram of a preferred embodiment of an automatic telephone system;

Figure 2 is a flowchart illustrating the calling operation of the automatic telephone system;

Figure 3 is a flowchart illustrating the automatic calling operation of the automatic telephone system;

Figure 4 illustrates a modification of the automatic calling operation of Figure 3, and more specifically a step S208A inserted between steps S208 and S209 of Figure 3; and

Figure 5 illustrates another modification of the automatic calling operation in

which the display of the call completion may be made by operation of a keypad.

Referring now to the drawings, and more particularly to Figure 1, an automatic radio telephone set, preferably a portable telephone set, is illustrated according to a preferred embodiment. Further examples of a radio telephone set include a cordless telephone set, a cellular telephone system and a personal handy-phone system.

More specifically, the portable radio telephone set comprises a key operation portion 1 (e.g., a keyboard having a plurality of alpha-numeric keys for actuation by the user(caller)) for receiving a telephone number of a party to be called and an abbreviated dial number and a message to be sent

The message to be sent includes a voice message and/or a data message. The voice and data message are input from a microphone and the key operation portion 1. Voice synthesizer and voice recognition software also could be utilized to convert text-to-voice and voice-to-text. A display portion 2 is for displaying the number or the message input to the key operation portion 1, a radio portion 3 is for communicating a signal to a base station or a master station (not shown), and a control portion 4 is for controlling the telephone set. The display portion 2 displays whether the automatic call has been completed.

Further, the portable radio telephone set includes a timer portion 5 for measuring automatic call intervals, and a memory portion 6 for storing an automatic call time 61, a call interval 62, a call time 63, a call connecting protocol 64, a message to be sent 65, a message 66 received from the called party (e.g., stores information/messages from the called party), and various types of data and protocols necessary for the control of the automatic telephone. Predetermined data (message) can be stored in addition to the memory portion for selective transmission to the called party. The predetermined data is prestored by the user in portion 65, for example.

Specifically, it is noted that the portion 65 can be formed by a long message portion 65A and a short message portion 65B, as shown in Figure 1. Long message portion 65A is for storing longer messages created by the user and would preferably have a larger capacity than that of short message portion 65B. Short message portion 65B is for storing a plurality of short (prestored) computer voice messages which are activated, for example, by the control portion 4.

Additionally, a microphone 7 for voice inputs from the user is provided coupled to an input of the control portion 4, and a speaker 8 is provided to receive outputs from the control portion 4 to provide auditory sounds to the user.

An automatic call can be repeated a plurality of times, and information as to whether the call has been completed can be displayed on the display portion 2.

Referring to the flowchart of Figure 2, the calling operation of this first embodiment will be described.

First, a call is made to a called party in a known manner by dialing the called party's telephone number and so forth and the dialed telephone number is registered. In step S101, it is determined whether the called party is absent (e.g., the judgement being based on whether the called party answers the telephone call or not). If the called party answers (e.g., a "NO" in step S101) the telephone, in step S102 a conversation is started.

By the same token, in step S103 if the called party is absent (e.g., a "YES" in step S101) but has an answering machine connected to the called party's telephone set for recording messages, it is determined whether a message is to be recorded, for example, on the called party's answering machine. If it is determined that a message is to be recorded, the message is subsequently recorded and the process ends. If no message is to be recorded or the called party does not have an answering machine connected to the called party's telephone set, the process continues to step S104.

In step S104, it is determined by the calling party whether an automatic call is to be conducted. Thus, the calling party is given the option of setting-up an automatic call (step S104). If the calling party decides that an automatic call is not to be made

(e.g., a "NO" in step S104), the processing ends (step S105).

However, if the calling party decides that an automatic call is to be conducted (e.g., a "YES" in step S104), in step S106 it is determined whether a default protocol switch has been set within a predetermined time limit. Specifically, defaults can be included advantageously in the system for greater efficiency.

Providing a concrete example, the system may be provided with a default protocol (e.g., call once an hour for the next five hours) so that the user does not need to enter as much information via the keyboard 1. The default protocol may include a default message (such as "This is Mr. Kobayashi, please call me at 03-3454-1111 when you receive this message") which can be established in advance and either directly communicated to the called party when the called party picks up the telephone receiver (handset) or placed on the called party's answering machine. Such a message would be sent via a computer voice activated by the control portion 4.

If a "YES" results in step S106, then in Step S107 the default protocol processing is set automatically and the processing ends. Setting of the default protocol preferably is implemented by a switch/actuator along with a timer device such that if the switch is not actuated within a predetermined time as set by a timer, then the process continues to step S108 for the automatic call operation to be set manually by the user.

Thus, the calling party sets the telephone for the automatic call (step S108). Such set-up for the automatic call is discussed in more detail below with reference to the flowchart of Figure 3.

Referring now to Figure 3, first in step S201 in response to the user's key operation, the control portion 4 stores the registered telephone number of the called party as the call connecting protocol in the memory portion 6 automatically. Thereafter, a call termination is executed. The storage of the telephone number may be executed after the call terminates.

Next, in step S202 it is determined whether a data message to be sent, is to be stored. If so, the processing continues to step S203 whether the message to be sent is stored to the memory portion 6 by operation of the key operation portion (e.g.,

keyboard) 1, from a data entry machine or from a personal computer connected to the telephone set. A voice message also could be stored by using the microphone 7 or the like. If the message to be sent is not to be stored, then the process continues to step S206 described below.

In step S204, it is determined whether the automatic call is to be continued or not. If the automatic call is to be canceled, the processing ends (step S205). If the automatic call is to be continued, the procedure proceeds to the next step.

In step S206, a call time is set. An absolute time (e.g., 5:00 PM) for the automatic call may be set or, alternatively, a relative time (e.g., 2 hours in the future) may be set via the operation of the key operation portion 1.

Additionally, in step S207, a calling interval (e.g., once an hour) and/or a call limit (e.g., call 10 times) may be set. For example, the calling party could request that the automatic call be placed once an hour for the next five hours. Further, the automatic telephone also may begin a calling interval at a specific time in the future. For example, the caller could begin a regular one-hour calling cycle that is to begin 24 hours in the future. Moreover, several call times may be set (e.g., 2:00 P.M., 2:30 P.M., 4:00 P.M., and 6:00 P.M., etc.)

Next, in step S208 it is determined whether the call confirmation function is to be set. With this function, the calling party can determine (e.g., see) whether the called party has received the automatic call and/or has responded to the call with a return message.

It is noted that, as shown in Figure 4, an incremental counter or the like may be provided for counting the number of automatic calls attempted, to determine whether the call limit has been reached in step S208A. If the call limit has been reached, the process ends. If the call limit has not been reached then the process continues to steps S209 and S213 accordingly.

In step S209, the timer 5 determines whether it is the appropriate time (e.g., the set time) to make the automatic call. At the appropriate time (e.g., a "YES" in step S209), the automatic call is performed (step S210).

In step S211, it is determined whether the called party has answered the automatic call. If the called party does not answer the automatic call, the processing loops back to step S209 and the automatic call is repeated at the predetermined time

intervals and/or for the predetermined number of times.

In step S211, if the called party answers the automatic call, the message is sent or conversation is started. The conversation is started, for example, when the calling party hears the voice of the called party from the microphone, and the calling party can speak from the speaker. Then, conversation begins.

Subsequently, in step S212, the display portion 5 of the calling party's telephone shows that the called party has answered and that the call has been completed (e.g., the message is sent).

The display of the call completion may be executed by the operation of the key pad 1, as shown in Figure 5 and described in further detail below.

Specifically, turning to Figure 5, assuming the automatic call is answered (e.g., a "YES" in step S211), a call termination processing takes place in step S510. In step S511, it is determined whether there is a key operation by the user. If there is a key operation (e.g., a "YES") in step S511, then in step S512 completion of the call is informed and the processing ends.

Conversely, if there is no key operation (e.g., a "NO") in step S511, then the processing simply ends.

By the same token, if the automatic call is not answered (e.g., a "NO" in step S211), a call termination processing takes place in step S513. In step S514, it is determined whether there is a key operation by the user. If there is a key operation (e.g., a "YES") in step S514, then in step S515 non-completion of the call is informed and the process continues to step S516. It is noted that, if there is no key operation by the user (e.g., a "NO" in step S514), then the processing continues to step S516.

In step S516, it is determined whether the automatic call is to be continued. If a "NO" results in step S516, the processing ends. If a "YES" results in step S516, then the processing loops back to step S209 for further processing of the automatic call operation. Thus, the display of the call completion may be executed by the operation of the key pad 1.

Returning to Figure 3, on the other hand, if the call confirmation function is not selected, when the appropriate time elapses (step S213), the automatic call is placed (step S214).

In step S215, it is determined whether the called-party has answered. If the

called-party does not answer the automatic call, the automatic call is repeated at the predetermined time intervals and/or for the predetermined number of times. If the called-party answers the automatic call, the message is sent, or conversation is started. The stored data messages may be sent after the data is converted to a voice message by the voice synthesizer.

A message from the called party is handled in the manner below. Specifically, a message from the called party is stored into a portion 66 of the memory 6. The message may be displayed with the information indicating a "call completion" (e.g., see step S212 of Figure 3).

While the foregoing embodiment confirms whether the automatic call is to be made after the data is input (step S204), such a confirmation can be made at any point in the calling cycle. However, since a person carrying the telephone with him is very likely to change his mind after a message is inputted, preferably the automatic call is confirmed after a message is input.

Further, in the above embodiment, the telephone number of the party to be called, the message to be sent, the call time, the call interval, and the number of times to be called are stored in this order, but the order is not limited to this particular order, and the order may be set freely. For example, titles of the data necessary to make the automatic call may be displayed on the display portion and may be set one by one, in any order, by the user.

While in the above embodiment the automatic call is set after attempting a regular call, the automatic call is not limited to be set after a call, and the automatic call can be set at any time. For example, the automatic call can be set before first attempting to make a personal call. In this case, the telephone number is stored by the entering the telephone number. Alternatively, the automatic call can be set during a call. In this case, during the call, the telephone number of the called-party is stored in the memory portion 6 automatically, and other data with respect to the automatic call is set. In such a case, it is unnecessary to reenter the phone number.

Further, the above description relates to a radio telephone set, but is applicable to any type of wire or wireless telephone set.

As described above, if a call cannot be completed, an automatic call can be made a specific number of times in the future. For

example, with the invention, a call can be placed at regular intervals in the future (e.g., one-hour intervals) for a specific number of times, or can be scheduled to occur at specific times (e.g., at 15 minutes after each hour) for a predetermined number of times. Further, the set can display whether the call has been successfully completed and can return a message to the calling party from the called party.

Further, since the call connecting protocol and the message to be sent are stored simultaneously in the memory portion, the stored content can be utilized without resetting necessary data. Thus, if a called party is absent, the calling party can set the automatic call by adding the message without disconnecting the call. This eliminates having to re-enter information such as the telephone number.

Each feature disclosed in this specification (which term includes the claims) and/or shown in the drawings may be incorporated in the invention independently of other disclosed and/or illustrated features.

The text of the abstract filed herewith is repeated below as part of the specification.

A method and telephone system for automatic calling includes a memory for storing at least some of a telephone number, a call time, a call interval and a call limit, and a controller for automatically making a call to the telephone number at the call time and during the call intervals until the call limit is reached or the call is completed.

CLAIMS

1. A telephone having an automatic call function, comprising
a memory for storing a telephone number and at least one of a call
time, a call interval, and a call limit; and
a controller for automatically calling said telephone number either at
said call time or during said call interval and, if said call is not completed, for
repeatedly calling said telephone number until either said call limit is reached
or said call is completed.
2. A telephone as claimed in Claim 1, further comprising operation means for
setting said at least one of a call time, a call interval, and a call limit.
3. A telephone as claimed in Claim 2, wherein said operation means comprises
a key pad.
4. A telephone as claimed in Claim 2 or 3, wherein said operation means
comprises means for setting a default protocol when an automatic call is to be
conducted.
5. A telephone as claimed in any preceding claim, further comprising a timer for
measuring said call time and said call interval.
6. A telephone as claimed in any preceding claim, wherein a message is stored
in said memory and, when said call is received, said message is transmitted.
7. A telephone as claimed in Claim 6, wherein, after said message is transmitted,
said controller is arranged to receive a response and store said response in said
memory.

8. A telephone as claimed in Claim 6 or 7, further comprising a display connected to said controller,
wherein after said message is transmitted, said display is arranged to display information that said call has been completed.
9. A telephone as claimed in any of Claims 6 to 8, wherein said memory is arranged to store a predetermined message for communicating to one of a called party directly when a call is completed and to an answering machine of a called party when said called party is absent when said call is completed.
10. A telephone as claimed in any preceding claim, wherein said call time comprises a predetermined future time.
11. A telephone as claimed in any preceding claim, wherein said call interval comprises a future time interval.
12. A telephone as claimed in any preceding claim, wherein said call limit comprises a maximum number of said calls that are to be made by said telephone.
13. A telephone as claimed in any preceding claim, wherein said telephone comprises a mobile telephone.
14. A telephone as claimed in any preceding claim, wherein said memory comprises a first message portion having a first capacity and for storing messages selectively created and stored by a calling party, and a second message portion having a second capacity and for storing predetermined messages prestored in advance, said first capacity being greater than said second capacity.

15. A telephone as claimed in any preceding claim, further comprising a microphone, connected to said controller, for inputting a message to said memory, and a speaker, connected to said controller, for outputting a message from said memory.
16. A telephone comprising:
 - a controller for making a call to a telephone number; and
 - a memory for storing, during said call, said telephone number, wherein an automatic call time is stored in said memory, and after said call ends, said controller is arranged to make an automatic call to said telephone number at said automatic call time.
17. A telephone as claimed in Claim 16, further comprising:
 - operation means for inputting and storing said telephone number to said memory via said controller,
 - wherein a call interval and a call limit are storable in said memory and said controller is arranged to repeat said automatic call a predetermined number of times equal to said call limit at said call intervals until either said automatic call is completed or said predetermined number of times is reached.
18. A telephone as claimed in Claim 16 or 17, wherein said telephone comprises a mobile telephone.
19. A telephone as claimed in any of Claims 16 to 18, wherein said memory comprises a first message portion having a first capacity and for storing messages selectively created and stored by a calling party, and a second message portion having a second capacity and for storing predetermined messages prestored in advance, said first capacity being greater than said second capacity.

20. A telephone as claimed in any of Claims 16 to 19, further comprising a microphone, connected to said controller, for inputting a message to said memory, and a speaker, connected to said controller, for outputting a message from said memory.
21. A method of communicating via a telephone system comprising the steps of:
storing a telephone number and at least one of a call time, a call interval, and a call limit in a memory; and
automatically calling said telephone number either at said call time or during said call interval and, if said call is not completed, repeatedly calling said telephone number until said call limit is reached or said call is completed.
22. A method as claimed in Claim 21, further comprising storing a message in said memory and, when said call is completed, transmitting said message.
23. A method as claimed in Claim 21 or 22, further comprising a step of setting said call time, said call interval, and said call limit.
24. A method as claimed in Claim 23, further comprising a step of measuring said call time and said call interval.
25. A method as claimed in Claim 23 or 24, wherein said call time comprises a predetermined future time, said call interval comprises a future time interval, and said call limit comprises a maximum number of said calls that are to be attempted to said telephone number.
26. A method as claimed in any of Claims 21 to 25, further comprising:
after said step of transmitting said message, receiving a response from a calling party and storing said response in said memory.

27. A method as claimed in Claim 26, further comprising a step of:
displaying information that said call has been completed.
28. A method of communicating via a telephone system, comprising:
making a call to a telephone number;
storing, during said call, said telephone number in a memory;
storing an automatic call time in said memory; and
making an automatic call to said telephone number at said automatic call time.
29. The method as claimed in Claim 28, further comprising:
inputting and storing said telephone number to said memory;
storing a call interval and a call limit in said memory; and
repeating said automatic call a predetermined number of times equal to said call limit at said call intervals until either said automatic call is completed or said predetermined number of times is reached.
30. A method as claimed in Claim 28 or 29, further comprising a step of setting a default protocol within a predetermined time when an automatic call is to be conducted.
31. A method as claimed in any of Claims 28 to 30, further comprising a step of storing a predetermined message for communicating to one of a called party directly when a call is completed and to an answering machine of a called party when said called party is absent when said call is completed.
32. A method as claimed in any of Claims 28 to 32, further comprising a step of displaying one of a call completion and a call non-completion to a calling party by operation of a key pad, after the automatic call is answered, a call termination has occurred, and a key operation by the calling party has occurred.

33. A telephone substantially as herein described with reference to and as shown in Figure 1 of the accompanying drawings.

34. A method of communicating via a telephone system substantially as herein described.



The
Patent
Office

17

Application No: GB 9720454.9
Claims searched: 1-15 & 21-27

Examiner: Peter Slater
Date of search: 22 December 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): H4K (KBNJ , KBNX , KBHX)

Int CI (Ed.6): H04M 1/272 , 1/274

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2238208 A (DAWSON) -See page 5,line 5 to page 6,line 4	1-3, 5, 6,10-13 21-25,33, 34
X	EP 0554180 A2 (GOLDSTAR) -See column 14,line 16 to column 15,line 9	1-3, 5, 6,10-13 21-25,33, 34
X	US 5224146 A (TOSHIBA) -See column 2,line 56 to column 7,line 27	1-3,5, 10-13,21, 23-25, 33, 34
X	US 4907258 A (MATSUSHITA) -See column 4,line 12 to column 7,line 46	1-3,5, 10-12,21 23-25 33,34
X	US 4887294 A (ITR INSTITUTE) -See column 2,line 24 to column 6,line 12	1-3,5, 10-12,21 23-25 33,34
X	US 4209668 A (UTILITY VERIFICATION) -See whole document	1-3,5, 10-12,21 23-25 33,34

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



The
Patent
Office

18

Application No: GB 9720454.9
Claims searched: 1-15 & 21-27

Examiner: Peter Slater
Date of search: 22 December 1997

Category	Identity of document and relevant passage	Relevant to claims
X	US 4052570 A (SUTTON) -See whole document	1-3,5, 10-12,21 23-25 33,34

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-009031
 (43)Date of publication of application : 10.01.1997

(51)Int.Cl. H04N 1/32
 G06F 13/00
 H04L 29/08
 H04M 11/00
 H04N 1/00

(21)Application number : 07-153328
 (22)Date of filing : 20.06.1995

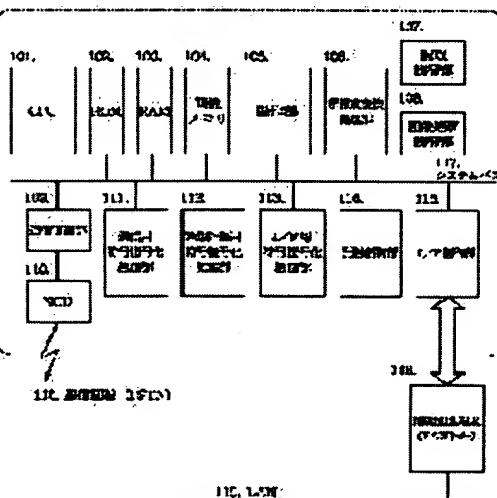
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(54) COMMUNICATION EQUIPMENT

(57)Abstract:

PURPOSE: To enable information processing terminal to execute the schedule management of recalling and the like in a communication equipment which can execute a call operation and communication in response to a communication request from the information processing terminal.

CONSTITUTION: CPU 101 causes a communication control part 109 and NCU 110 to execute dialing and facsimile transmission in response to the communication request inputted from an operation part 105 or that received from the information processing terminal 118 through an I/F control part 115. A redialing processing is inhibited at the time of the communication request from the information processing terminal 118.



LEGAL STATUS

[Date of request for examination] 31.05.2002
 [Date of sending the examiner's decision of rejection]
 [Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]
 [Date of final disposal for application]
 [Patent number] 3507198
 [Date of registration] 26.12.2003
 [Number of appeal against examiner's decision of rejection]
 [Date of requesting appeal against examiner's decision of rejection]
 [Date of extinction of right]

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